List of Current Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Claims 1 - 12 (Cancelled).

13. (New) A method for magneto-inductive determination of flow rate of a medium flowing through a measuring tube in the direction of the measuring tube axis, wherein a magnetic field passes through the measuring tube essentially perpendicularly to the measuring tube axis, a measurement voltage is induced in at least one measuring electrode arranged essentially perpendicularly to the axis of the measuring tube, and the induced measurement voltage delivers information concerning the volume flow of the medium in the measuring tube, the method comprising the steps of:

issuing a test pulse (U_p) of a defined pulse length (t_p) to the measuring electrode;

determining at least one signal in response to the test pulse (U_p) at at least two measuring points in time (t_1, t_2);

selecting the measuring points in time (t_1, t_2) to lie in a time window (t_{end} - t_{begin}), which is such that no predictable disturbance signals occur on the measuring electrode in said time window (t_{end} - t_{begin});

determining the relaxation time (τ), or the length of time until reaching of a predetermined state of discharge (U_i), of the measuring electrode on the basis of the response signal determined in the measuring points in time (t_1, t_2); and

detecting a malfunctioning of the measuring electrode on the basis of the determined relaxation time, or on the basis of the length of time until the reaching of the defined state of discharge (U_i), of the measuring electrode.

14. (New) The method as claimed in claim 13, wherein:

said relaxation time, or the length of time until reaching of the defined state of discharge (U_i), of the measuring electrode is determined in a starting state, which is

defined on the basis that there is no malfunction present on the measuring electrode due to accretions, and

the determined relaxation time (τ), or the length of time until reaching of the defined state of discharge (U_i), of the measuring electrode is stored as a desired value.

15. (New) The method as claimed in claim 13, wherein:

the test pulse (U_p) is applied to the measuring electrode with a predetermined, or predeterminable, pulse length (t_p) and/or with a predetermined, or predeterminable, pulse repetition frequency.

16. (New) The method as claimed in claim 15, wherein;

the pulse length (t_p) of the test pulse (U_p) and/or the pulse repetition frequency of the test pulses is predetermined, or determined, as a function of conditions at the measuring location, especially as a function of the medium to be measured.

17. (New) The method as claimed in claim 13, further comprising the step of:

determining whether the measuring electrode is working correctly, or whether a malfunctioning of the measuring electrode is present, on the basis of a time change of the relaxation time, or on the basis of the length of time until reaching of the defined state of discharge (U_i), of the measuring electrode.

18. (New) The method as claimed in claim 14, further comprising the step of:

displaying and/or issuing a malfunctioning or an indication of a coming malfunctioning, when the time change of the relaxation time, or the change of the length of time until the reaching of the defined state of discharge (U_i), of the measuring electrode lies outside of a tolerance range around the desired value or when the relaxation time, or the length of time until the reaching of the defined state of discharge (U_i), of the measuring electrode changes tendentially.

19. (New) The method as claimed in claim 13, wherein:

said time window (t_{end} - t_{begin}) is so selected that it lies after the point in time at which the test pulse (U_p) was applied to the measuring electrode to be examined and that it lies before the point in time at which the magnetic field on the measuring electrode to be examined is switched.

20. (New) The method as claimed in claim 13, wherein:

for the case in which the malfunctioning occurs as a result of the formation of a conductive coating on the measuring electrode, an automatic cleaning of the measuring electrode is activated, as soon as an indication of malfunction is displayed and/or issued.

21. (New) The method as claimed in claim 13, wherein:

for the case in which the malfunctioning occurs as a result of the formation of a conductive or non-conductive coating on the measuring electrode, a display and/or an output occurs, indicating that the measuring electrode needs to be cleaned.

22. (New) The method as claimed in claim 20, wherein:

the automatic cleaning of the measuring electrode is done by means of a direct or alternating current.

23. (New) An apparatus for measuring flow of a medium flowing through a measuring tube in the direction of the measuring tube axis, comprising:

a magnet arrangement, which produces a magnetic field passing through the measuring tube and extending essentially transversely to the measuring tube axis;

a measuring electrode arrangement, which delivers a measured value depending on the flow velocity of the medium through the measuring tube; and

a control/evaluation unit, which determines the flow rate of the medium in the measuring tube on the basis of the measured value; wherein:

said control/evaluation unit determines at least one signal in response to the test pulse (U_p) at at least two measuring points in time (t_1, t_2) lying in a defined time window (t_{end} - t_{begin}),

said time window (t_{end} - t_{begin}) is selected such that no predictable disturbance signals occur on the measuring electrode in this time window (t_{end} - t_{begin}); and

said control/evaluation unit determines the relaxation time, or the length of time until reaching of a defined state of discharge (U_i), of said measuring electrode on the basis of the response signal measured at the predetermined measuring points in time (t_1, t_2).

24. (New) Apparatus as claimed in claim 23, wherein:
the test pulse is a rectangular pulse (U_p).